calculated value which is in excess of the threshold value, said micro-processor causes ignition of gas generating material and thus inflation of said airbag.

22. (Rewritten) An airbag safety restraint system for a vehicle comprising:

an inflatable airbag having an interior,

an inflator assembly having an inflator housing, an ignitable gas generating material contained in said inflator housing and at least one passage extending between said gas generating material and said interior of said airbag such that upon ignition of said gas generating material, gas is generated and flows through said at least one passage into said interior of said airbag to inflate said airbag, and

an electronic crash sensor for causing ignition of said gas generating material upon a determination of a crash requiring inflation of said airbag,

said crash sensor comprising

a sensor housing situated exterior of and proximate to said inflator housing, and

an accelerometer arranged in said sensor housing and including a sensing mass movable relative to said sensor housing in response to accelerations of said sensor housing resulting from the crash, said accelerometer being arranged to generate a signal representative of the movement of said sensing mass over time, said crash sensor being arranged to cause ignition of said gas generating material if the movement over time of said sensing mass represented by said signal results in a calculated value which is in excess of a threshold value.

REMARKS

Entry of this amendment and reconsideration of the present application, as amended, are respectfully requested.

In this amendment, claims 3 and 7 have been amended to remove minor informalities noted by the Examiner and claims 16 and 22 have been amended to include the subject matter of claims 17 and 23, respectively. As such, the amendment reduces the number of outstanding rejections and does not raise any new issues and therefore should be entered.

Claims 1-16, 18-22 and 24-31 are presently active in this application, claims 17 and 23 having been cancelled. Claims 1-7, 9-14, 16, 18, 19, 21, 22, 24 and 26-31 are rejected and claims 8, 15, 20 and 25 are allowable.

Information Disclosure Statement

Pursuant to the Examiner's request, enclosed is a copy of the document "A Critique of Single Point Sensing" by Breed et al.

Disclosure

The specification at page 20, line 4 and claim 7 at line 2 have been amended as suggested by the Examiner. As such, the Examiner's objection to the disclosure has been overcome and should be removed.

Rejection of Claims 3-5 under 35 U.S.C. §112

Claims 3-5 were rejected under 35 U.S.C. §112, second paragraph, because the phrase "sensing means" in claim 3 lacked antecedent basis.

Claim 3 has been amended to change the phrase "sensing means" to "sensing mass", for which there is antecedent basis in claim 1. This change does not raise a new issue.

In view of the change to claim 3, it is respectfully submitted that the Examiner's rejection of claims 3-5 under 35 U.S.C. §112, second paragraph, has been overcome and should be removed.

Rejections on the Merits

Claims 1, 6, 10, 12, 28 and 29 were rejected under 35 U.S.C. §103(a) as being unpatentable over Haviland (U.S. Pat. No. 3,791,667) in view of Breed (U.S. Pat. No. 4,666,182).

Claims 2-4, 14 and 30 were rejected under 35 U.S.C. §103(a) as being unpatentable over Breed in view of Haviland and Merhar (U.S. Pat. No. 3,701,903).

Claims 5, 7, 9 and 11 were rejected under 35 U.S.C. §103(a) as being unpatentable over Breed in view of Haviland and Spies et al. (U.S. Pat. No. 6,015,162).

Claims 16-19, 21-24, 26 and 27 were rejected under 35 U.S.C. §103(a) as being unpatentable over Breed in view of Spies et al.

Claim 31 was rejected under 35 U.S.C. §103(a) as being unpatentable over Haviland in view of Breed and Spies et al.

Claim 13 was rejected under 35 U.S.C. §103(a) as being unpatentable over Haviland in view of Breed and Lau et al. (U.S. Pat. No. 5,273,309).

Summary of the Invention

Prior to discussing differences between the prior art cited in the rejections of the claims and reasons why it is not obvious to one of ordinary skill in the art to combine purported teachings of the references to arrive at the invention, a review of the invention is warranted.

Claims 1-15 and 28-31 are directed to a vehicle including a side impact airbag system comprising a system housing arranged on a side of the vehicle alongside at least a portion of the passenger compartment and defining an interior space, at least one inflatable airbag arranged in the interior space, inflator means arranged at least partially within the interior space for inflating the airbag(s) and including an inflator housing containing propellant, and a crash sensor for initiating inflation of the airbag(s) via the inflator means upon a determination of a crash requiring inflation thereof.

In the embodiment of claims 1-15, 30 and 31, the crash sensor comprises a sensor housing "arranged within said system housing", the system housing being arranged on the side of the vehicle, and a sensing mass arranged in the sensor housing to move relative to the sensor housing in response to accelerations of the sensor housing resulting from the crash into the first side of the vehicle (as set forth in independent claim 1). Upon movement of the sensing mass in excess of a threshold value, the crash sensor initiates the inflator means to inflate the airbag. This embodiment is shown schematically in Annex A hereto.

In the embodiment of claims 28 and 29, the crash sensor comprises a sensor housing arranged proximate to the inflator housing (either within the system housing or exterior thereof), and a sensing mass arranged in the sensor housing to move relative to the sensor housing in response to accelerations of the sensor housing resulting from the crash into the side of the vehicle (as set forth in independent claim 28). Upon movement of the sensing mass in excess of a

threshold value, the crash sensor initiates the inflator means to inflate the airbag. This embodiment is shown schematically in Annex B.

Claims 16-27 are directed to an airbag safety restraint system for a vehicle comprising an inflatable airbag having an interior and an inflator assembly having an inflator housing containing an ignitable gas generating material and at least one passage extending between the gas generating material and the interior of the airbag such that upon ignition of the gas generating material, gas is generated and flows through the passage(s) into the interior of the airbag to inflate the airbag. An electronic crash sensor causes ignition of the gas generating material upon a determination of a crash requiring inflation of the airbag.

In these embodiments, the crash sensor comprises a sensor housing "situated exterior of said inflator housing", i.e., the crash sensor is not arranged in the inflator housing. The provision of separate immediate housings of the crash sensor and inflator overcomes the problem in certain prior art systems wherein the sensor is placed inside of the inflator because in such systems, the strength requirements of the inflator walls increases and thus the size and weight of the system increases (as discussed in the specification at page 1, lines 28-30). This embodiment of the invention is shown schematically in Annex C.

In the embodiments of claims 16-21, the crash sensor further includes a sensing mass arranged in the sensor housing to move relative to the sensor housing in response to accelerations of the sensor housing resulting from the crash, and a micro-processor comprising an algorithm for determining whether the movement of the sensing mass over time results in a calculated value which is in excess of a threshold value. If so, the micro-processor causes ignition of gas generating material and thus inflation of the airbag.

In the embodiments of claims 22-27, the crash sensor further comprises an accelerometer arranged in the sensor housing and including a sensing mass movable relative to the sensor housing in response to accelerations of the sensor housing resulting from the crash. The accelerometer generates a signal representative of the movement of the sensing mass over time. The crash sensor causes ignition of the gas generating material if the movement over time of the sensing mass represented by the signal results in a calculated value in excess of a threshold value.

Issues

1. Whether it would have been obvious or even possible for a person having ordinary skill in the art at the time the invention was made to combine purported teachings of Breed with the system of Haviland and thereby arrive at the embodiments of the invention set forth in claims 1, 6, 10, 12, 28 and 29.

2. Whether it would have been obvious or even possible for a person having ordinary skill in the art at the time the invention was made to include the electronic sensor of Merhar in the system of Breed and mount the modified Breed system alongside a passenger compartment in view of Haviland and thereby arrive at the embodiments of the invention set forth in claims 2-4, 14 and 30.

3. Whether it would have been obvious or even possible for a person having ordinary skill in the art at the time the invention was made to include a microprocessor in the sensor housing as shown in Spies et al. in the Breed sensor and mount the modified Breed system alongside a passenger compartment in view of Haviland and thereby arrive at the embodiments of the invention set forth in claims 5, 7, 9 and 11.

4. Whether it would have been obvious or even possible for a person having ordinary skill in the art at the time the invention was made to include a microprocessor in the sensor housing as shown in Spies et al. in the Breed sensor and thereby arrive at the embodiments of the invention set forth in claims16-19, 21-24, 26 and 27.

5. Whether it would have been obvious or even possible for a person having ordinary skill in the art at the time the invention was made to modify the Breed sensor to have the sensor housing outside of the inflator housing and mount the modified Breed system alongside a passenger compartment in view of Haviland and thereby arrive at the embodiment of the invention set forth in claim 31.

6. Whether it would have been obvious or even possible for a person having ordinary skill in the art at the time the invention was made to mount the sensor of Breed on a fixed part of the vehicle in view of Lau et al. and alongside a passenger compartment in view of Haviland and thereby arrive at the embodiment of the invention set forth in claim 13.

Arguments

Claims 1, 6, 10, 12, 13, 28 and 29

The Examiner's rejection of claims 1, 6, 10, 12, 28 and 29 under 35 U.S.C. §103(a) as being unpatentable over Haviland in view of Breed is respectfully traversed on the grounds that Haviland and Breed do not teach or suggest, either individually or in combination, a crash sensor arranged on a side of a vehicle and actuatable based on a crash into the side of the vehicle, and further that Breed et al. actually teaches away from the Examiner's proposed modification.

Breed

Breed is directed to a non-crush zone all-mechanical damped sensor. As background of the invention, Breed discusses differences between sensors mounted in the crush zone of the vehicle, i.e., that portion of the vehicle which will crush in an impact, and non-crush zone sensors, i.e., sensors which are not located in the crush zone of the vehicle (see col. 1, lines 6-46). The design criteria for a crush-zone sensor and a non-crush zone sensor are different and include differences in the manner in which the sensor is triggered by a velocity change and the amount of energy to actuate the release mechanism.

The sensor of Breed is specifically designated for use solely outside of the crush zone (col. 1, lines 63-68, col. 2, lines 39-41). Its construction is purportedly unique and solves the problem of locating a damped sensor outside of the frontal crush zone of a vehicle.

Haviland

Haviland shows a cushioning system for a vehicle including housings 32, some of which are recessed in the doors 20,22. Housings 32 include a stretchable membrane which is expanded by ducting fluid under pressure into the housings 32 through fittings 42. Ducting of the fluid occurs upon actuation of an inertia or impact-actuated control mechanism (col. 2, lines 60-66).

Arguments

1. Breed and Haviland do not disclose all of the features of the claims.

With respect to claims 1, 6, 10 and 12, Breed and Haviland do not disclose a crash sensor having a sensor housing arranged on a side of the vehicle and a sensing mass arranged in the sensor housing of the crash sensor to move relative to the sensor housing in response to accelerations of the sensor housing resulting from the crash into the side of the vehicle (as set forth in claim 1).

Breed does not mention anything about placement of the restraint system 8 on a side of the vehicle and in fact, explicitly states that the sensor is for mounting outside of the crush zone. Although claim 1 does not mention that the crash sensor is placed in the crush zone, this would be inherent if not obvious to one of ordinary skill in the art because one skilled in the art would appreciate that the side of the vehicle alongside a portion of the passenger compartment is in a crush zone of the vehicle since it is invariably crushed upon impact by an object into the side of the vehicle.

Haviland mentions that ducting of the fluid occurs upon actuation of an inertia or impact-actuated control mechanism. However, Haviland does not disclose where such a control mechanism is located or how it is actuated, e.g., upon a side impact, frontal impact, etc.

Therefore, Breed and Haviland do not explicitly disclose all of the features of claim 1, namely, a crash sensor having a sensor housing arranged within a system housing on a side of the vehicle and which sensor housing includes a sensing mass arranged to respond to accelerations of the sensor housing resulting from a crash into the side of the vehicle.

Accordingly, the combination of Breed and Haviland would not include all of the features of claim 1 and thus does not render the embodiments of claims 1, 6, 10 and 12 unpatentable.

With respect to claims 28 and 29, Breed and Haviland do not disclose a crash sensor having a sensor housing arranged proximate an inflator housing arranged on a side of the vehicle and a sensing mass arranged in the sensor housing of the crash sensor to move relative to the sensor housing in response to accelerations of the sensor housing resulting from the crash into the side of the vehicle (as set forth in claim 28).

Breed does not mention anything about placement of the inflator 12 of the restraint system 8 on a side of the vehicle and in fact, explicitly states that the sensor is for mounting outside of the crush zone. As noted above, one skilled in the art would appreciate that the side of the vehicle alongside the passenger compartment is invariably in a crush zone of the vehicle.

Haviland does not disclose where the inflator and crash sensor are located and thus cannot teach or suggest the placement of a sensor housing of a crash sensor proximate an inflator housing of inflator means.

Therefore, Breed and Haviland do not disclose all of the features of claim 28, namely, a crash sensor having a sensor housing arranged proximate an inflator housing situated on a side of

the vehicle and which sensor housing includes a sensing mass arranged to respond to accelerations of the sensor housing resulting from a crash into the side of the vehicle.

Accordingly, the combination of Breed and Haviland would not include all of the features of claim 28 and thus does not render the embodiments of claims 28 and 29 unpatentable.

2. Breed teaches away from the Examiner's proposed modification.

The Examiner takes the position that it would have been obvious to modify Haviland to include an airbag system such as taught by Breed along its sides.

Obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion or motivation to do so found with in the references themselves or in the knowledge generally available to one of ordinary skill in the art. *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988); *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992). The mere fact that references can be combined or modified does not render the resultant combination obvious unless the prior art also suggests the desirability of the combination. *In re Mills*, 916 F.2d 680, 16 USPQ2d 1430 (Fed. Cir. 1990). If the proposed modification would render the prior art invention unsatisfactory for its intended purpose, then there is no suggestion or motivation to make the proposed modification. *In re Gordon*, 733 F.2d 900, 221 USPQ 1125 (Fed. Cir. 1984).

The Examiner's position is respectfully traversed on the grounds that the sensor of Breed is expressly designed as a non-crush zone sensor whereas the sides of the vehicle alongside the passenger compartment are invariably in a crush zone of the vehicle. The proposed modification would thus render the Breed sensor unsatisfactory for its intended purpose so that there is no suggestion or motivation to make the proposed modification. *Ibid.*

Breed emphasizes that the construction of the sensor thereof is unique in order to enable its use outside the frontal crush zone of the vehicle. Haviland includes housings for stretchable membranes 52 recessed in the doors 20,22 of the vehicle. The doors of the vehicle are in a crush zone of the vehicle as they will invariably be crushed upon impact of an object into the side of the vehicle.

Since the essence of the novelty of the Breed sensor lies in its unique construction to enable it to function outside of the crush zone, Breed teaches away from the placement of the sensor thereof in a crush zone of a vehicle, such as in the doors of Haviland.

The sensor of Breed is intentionally designed to require very little energy to actuate the release mechanism. This is consistent with the placement of the sensor outside of the crush zone, i.e., in the crush zone, sensors are designed to actuate upon a relatively large energy force. Placement of the sensor of Breed in a crush zone would thereby result in the sensor being overly sensitive as it would be actuated upon minor contacts and thus would be unsatisfactory for its intended purpose.

In view of the specific design of the sensor of Breed as a non-crush zone sensor, placement of the sensor in the crush zone would render it unsatisfactory for its intended purpose, i.e., discriminating between major crashes warranting deployment of an occupant restraint and minor crashes which do not warrant deployment of the occupant restraint. As such, there is no suggestion or motivation to place the sensor of Breed in a crush zone of a vehicle, e.g., in a door of a vehicle as in the Examiner's proposed combination of Breed and Haviland.

Conclusion

In view of the arguments presented above, it is respectfully submitted that not only do Breed and Haviland not include all of the features of claims 1, 6, 10, 12, 28 and 29, but that it would not be obvious to one of ordinary skill in the art to modify the system of Haviland to include an airbag system as in Breed along its sides. The sensor of Breed is simply inappropriate for placement along the sides of the vehicle and thus in a crush zone of the vehicle in side impacts.

In view of the foregoing, it is respectfully submitted that claims 1, 6, 10, 12, 28 and 29 are not render unpatentable by Haviland in combination with Breed.

Claims 2-4, 14 and 30

The Examiner's rejection of claims 2-4, 14 and 30 under 35 U.S.C. §103(a) as being unpatentable over Breed in view of Haviland and Merhar is respectfully traversed.

It would not have been obvious to one of ordinary skill in the art at the time the invention was made to modify Breed to include a system mounted alongside the passenger compartment as purportedly taught by Haviland and an electronic sensor as purportedly taught by Merhar in view of a significant difference between the position of the crash sensor of Breed and the crash sensor of Merhar.

The crash sensor of Breed, the sensor-initiator 10, is intentionally designed to be mounted entirely outside of the crush zone of the vehicle (col. 2, lines 39-41). By contrast, the crash

sensor of Merhar is mounted in the crush zone so that the crystal 10 is compressed between the mass 43 and the vehicle 41 in response to a crash. Mounting the crystal 10 outside of the crush zone as in Breed would not result in a compressive force being applied to the crystal and thus would negate the entire operability of the crash sensor of Merhar.

The crash sensor of Merhar is not designed to be mounted in the same location as the crash sensor of Breed and thus one skilled in the art would not be motivated to substitute the crash sensor of Merhar for the crash sensor of Breed or include the crash sensor of Merhar in the Breed system. Indeed, the proposed modification would thus render the Merhar electronic sensor unsatisfactory for its intended purpose so that there is no suggestion or motivation to make the proposed modification. *Ibid.*

Moreover, claims 2-4, 14 and 30 include all of the limitations of claim 1. Merhar does not overcome the deficiencies of the combination of Breed and Haviland discussed above, and therefore, one could not combine Breed, Haviland and Merhar and arrive at the embodiments of the inventions set forth in claims 2-4, 14 and 30.

Accordingly, it is respectfully submitted that the Examiner's proposed combination of Breed, Haviland and Merhar is untenable and that the Examiner's rejection of claims 2-4, 14 and 30 under 35 U.S.C. §103(a) in view of this combination has been overcome and should be removed.

Claims 5, 7, 9 and 11

The Examiner's rejection of claims 5, 7, 9 and 11 under 35 U.S.C. §103(a) as being unpatentable over Breed in view of Haviland and Spies et al. is respectfully traversed.

Spies et al. does not overcome the deficiencies of the combination of Breed and Haviland discussed above, and therefore, one could not combine Breed, Haviland and Spies et al. and arrive at the embodiments of the invention set forth in claims 5, 7, 9 and 11.

Moreover, with respect to claim 9, this claim recites that the inflator means comprise a primer arranged in the inflator housing (with the propellant) and forming part of an electronic circuit. In Spies et al., the primer is not arranged in the same housing as the propellant. Rather, it is an explicit feature of the Spies et al. system to separate a housing containing the solid fuel from a housing containing the ignition means (see col. 2, lines 7-21). This is achieved by providing a

first closed housing 1 including the ignition means and primer 4 and a second housing 7 including the tablets of solid fuel 10.

In contrast to Spies et al., in the embodiment set forth in claim 9, the primer is arranged in the same housing as the propellant, whereby the electronic sensor is arranged in a separate sensor housing. Spies et al. clearly teaches away from this construction.

In view of the foregoing, it is respectfully submitted that claims 5, 7, 9 and 11 are not taught or suggested by Breed, Haviland and Spies et al., in combination, and further that one skilled in the art could not, and in any event would not be motivated to, combine Spies et al., Breed and Haviland and arrive at the embodiments of the invention set forth in claims 5, 7, 9 and 11.

Claims 16-19, 21-24, 26 and 27

The Examiner's rejection of claims 16-19, 21-24, 26 and 27 were rejected under 35 U.S.C. §103(a) as being unpatentable over Breed in view of Spies et al. is respectfully traversed.

One skilled in the art would not be motivated to combine the sensor of Spies et al. with the airbag safety restraint system of Breed in view of a particularly (and allegedly) novel feature of the Spies et al. sensor.

Spies et al. shows a restraint system with two separate closed housings that facilitate storage, assembly and environmentally safe disposal. The first housing includes the solid fuel tablets and the second housing includes the sensor, triggering element and ignition structure (see the Abstract). It is alleged that in the prior art, the igniter/primer is structurally integrated with the gas generator housing resulting in electrical and chemical problems (see col. 1, lines 45-62). Thus, Spies et al. provides a solution to these problems by having the two housing which are in non-use, separated from one another and thus cannot come into contact with each others fillings other than at will (col. 2, lines 15-21).

In Breed, the sensor housing is inside the inflator housing. As a result of this positioning, there is a significant possibility of the firing pin 66 impacting the primer 36 resulting in unintentional inflation of the airbag.

In view of the express desire in Spies et al. to provide the sensor housing separate from the inflator housing and the presence of the sensor housing within the inflator housing in Breed,

one skilled in the art would not be motivated to substitute the sensor housing (and sensor) of Spies et al. for the sensor in Breed.

Furthermore, with respect to claims 21 and 26, in Spies et al., the primer is not arranged in the same housing as the gas generating material that causes inflation of the airbag. Rather, it is an explicit feature of the Spies et al. system to separate a housing containing the solid fuel from a housing containing the ignition means (see col. 2, lines 7-21).

In view of the foregoing, it is respectfully submitted that claims 16-19, 21-24, 26 and 27 are not taught or suggested by Breed and Spies et al., in combination, and further that one skilled in the art could not, and in any event would not be motivated to, combine Spies et al. and Breed and arrive at the embodiments of the invention set forth in these claims.

Claim 31

The Examiner's rejection of claim 31 under 35 U.S.C. §103(a) as being unpatentable over Haviland in view of Breed and Spies et al. is respectfully traversed.

It would not have been obvious to one of ordinary skill in the art at the time the invention was made to modify the sensor of Breed in the system of Haviland to provide a sensor housing outside of the inflator housing in view of Spies et al.

As noted above, Spies et al. shows a restraint system with two separate, closed housings that facilitate storage, assembly and environmentally safe disposal. In the Haviland system including the Breed sensor, the sensor housing (of Breed) is arranged inside the inflator housing so that there is a significant possibility of the firing pin 66 impacting the primer 36 resulting in unintentional inflation of the airbag.

The relative positioning of the sensor housing and inflator housing in Spies et al. and Breed thus conflict with one another, i.e., in Spies et al., the sensor housing is separate from the inflator housing whereas in Breed, the sensor housing is within the inflator housing in Breed. In view of this conflict, and the express intention of Spies et al. to maintain the sensor housing separate from the inflator housing, one skilled in the art would not be motivated to substitute the sensor housing (and sensor) of Spies et al. for the sensor of Breed in the Haviland system.

In view of the foregoing, it is respectfully submitted that the embodiment of claim 31 is not taught or suggested by Breed, Haviland and Spies et al., in combination, and further that one

skilled in the art could not, and in any event would not be motivated to, combine Spies et al., Haviland and Breed and arrive at the embodiments of the invention set forth in claim 31.

Claim 13

The Examiner's rejection of claim 13 under 35 U.S.C. §103(a) as being unpatentable over Haviland in view of Breed and Lau et al. is respectfully traversed.

It would not be obvious to one of ordinary skill in the art to modify the sensor of Breed in the system of Haviland to mount the sensor on a fixed part of the side of the vehicle in view of Lau et al.

Lau et al. shows an air bag assembly for side impact protection in which the inflator and air bag(s) are stored in the vehicle pillar adjacent the front seat back.

Lau et al. does not disclose a self-contained airbag system in which a crash sensor housing is situated within the same system housing as an airbag and inflator therefor, and which crash sensor housing contains a sensing mass operative to detect a crash into the side of the vehicle requiring air bag deployment, and therefore does not overcome the deficiencies of the combination of Haviland and Breed.

In view of the foregoing, it is respectfully submitted that the embodiment of claim 13 is not taught or suggested by Breed, Haviland and Lau et al., in combination, and further that one skilled in the art could not, and in any event would not be motivated to, combine Lau et al., Haviland and Breed and arrive at the embodiments of the invention set forth in claim 13.

Conclusion

None of the prior art references cited by the Examiner disclose all of the features of any of the pending claims and one of ordinary skill in the art would not be motivated to modify the references in the manner suggested by the Examiner in view of the lack of any teaching or suggestion supporting the modifications.

In view of the arguments presented above, it is respectfully submitted that the Examiner's rejections of the claims have been overcome and should be removed and that the present application is now in condition for allowance.

If the Examiner should determine that minor changes to the claims to obviate informalities are necessary to place the application in condition for allowance, the Examiner is respectfully requested to contact the undersigned to discuss the same.

An early and favorable action on the merits is earnestly solicited.

FOR THE APPLICANTS
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Enc.
"A Critique of Single Point Sensing"
Annexes A-C
Appendix of Marked-up Claims

APPENDIX OF MARKED-UP CLAIMS

3. (Twice Amended) The vehicle of claim 2, wherein said electronic sensor further comprises generating means coupled to said sensing [means] mass for generating a signal representative of the movement of said sensing mass.

7. (Twice Amended) The vehicle of claim 6, wherein said crash sensor further [comprising] comprises a micro-processor for determining whether the movement of said sensing mass over time results in an algorithmic determined value which is in excess of the threshold value based on said signal.

16. (Twice Amended) An airbag safety restraint system for a vehicle comprising:

an inflatable airbag having an interior,

an inflator assembly having an inflator housing, an ignitable gas generating material contained in said inflator housing and at least one passage extending between said gas generating material and said interior of said airbag such that upon ignition of said gas generating material, gas is generated and flows through said at least one passage into said interior of said airbag to inflate said airbag, and

an electronic crash sensor for causing ignition of said gas generating material upon a determination of a crash requiring inflation of said airbag,

said crash sensor comprising

a sensor housing situated exterior of and proximate to said inflator housing,

a sensing mass arranged in said sensor housing to move relative to said sensor housing in response to accelerations of said sensor housing resulting from the crash, a signal representative of the movement of said sensing mass being generated, and

a micro-processor comprising an algorithm for determining whether the movement of said sensing mass over time results in a calculated value which is in excess of a threshold value based on the signal such that if the movement over time of said sensing mass results in a calculated value which is in excess of the threshold value, said micro-processor causes ignition of gas generating material and thus inflation of said airbag.

22. (Twice Amended) An airbag safety restraint system for a vehicle comprising:

an inflatable airbag having an interior,

an inflator assembly having an inflator housing, an ignitable gas generating material contained in said inflator housing and at least one passage extending between said gas generating material and said interior of said airbag such that upon ignition of said gas generating material, gas is generated and flows through said at least one passage into said interior of said airbag to inflate said airbag, and

an electronic crash sensor for causing ignition of said gas generating material upon a determination of a crash requiring inflation of said airbag,

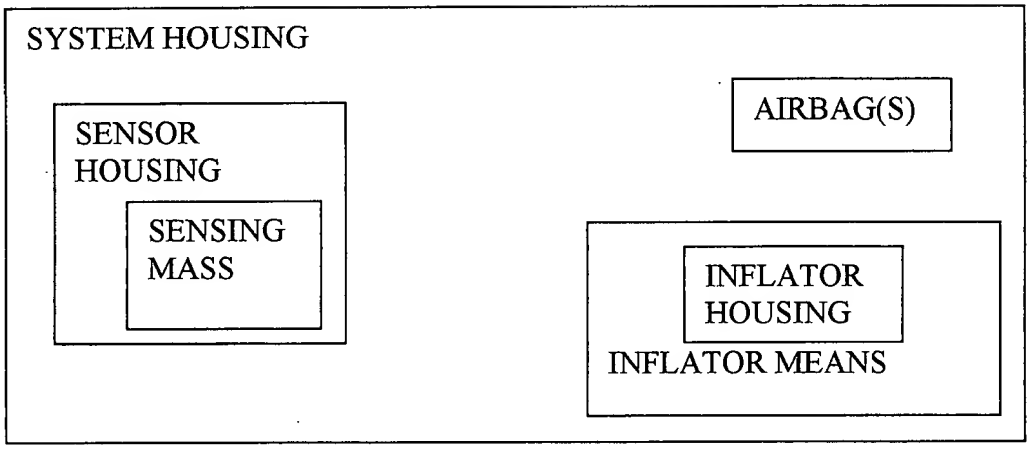
said crash sensor comprising

a sensor housing situated exterior of and proximate to said inflator housing, and

an accelerometer arranged in said sensor housing and including a sensing mass movable relative to said sensor housing in response to accelerations of said sensor housing resulting from the crash, said accelerometer being arranged to generate a signal representative of the movement of said sensing mass over time, said crash sensor being arranged to cause ignition of said gas generating material if the movement over time of said sensing mass represented by said signal results in a calculated value which is in excess of a threshold value.

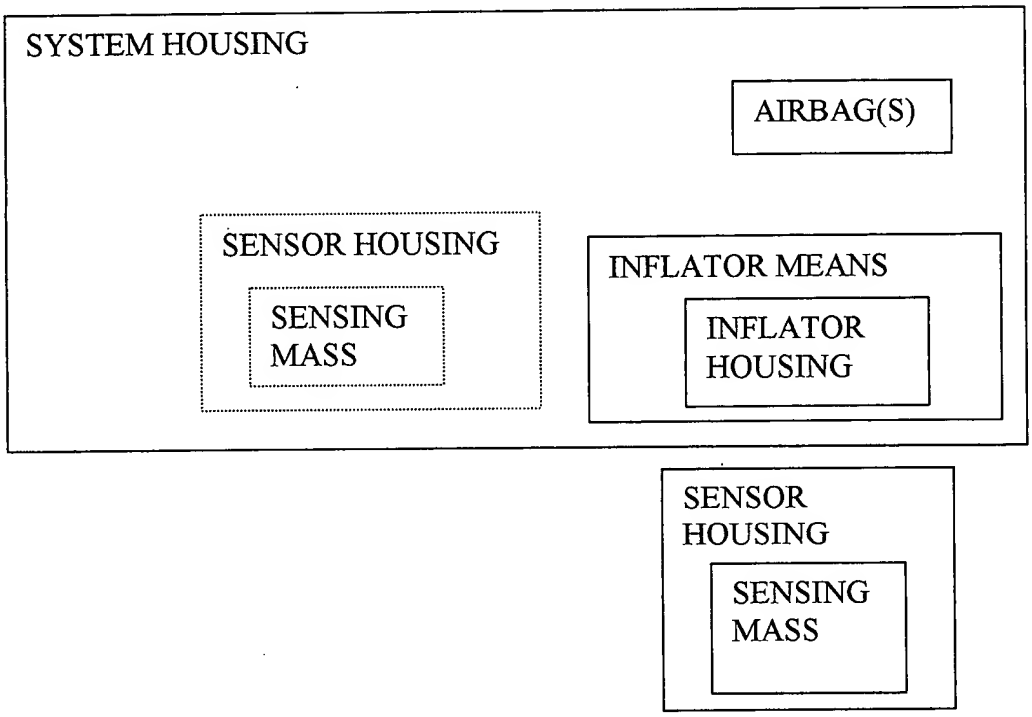
ANNEX A

(Sensor Housing Within Inflator Housing)



ANNEX B

(Sensor Housing Proximate (and Within (Dotted lines) or Outside of (Solid lines)) Inflator Housing)



ANNEX C

(Sensor Housing Outside of Inflator Housing)